

## CLAIMS

1. An anti-inflammatory compound comprising the structure:

$X_a-X_b$ ,

5 wherein  $X_a$  is a membrane translocation domain comprising from 6 to 15 amino acid residues; and  $X_b$  is a NEMO binding sequence.

10 2. The anti-inflammatory compound of claim 1, further comprising a modifying group.

15 3. The anti-inflammatory compound of claim 1, wherein  $X_b$  consists of the following structure:

$(Y)_n-X_1-X_2-X_3-X_4-X_5-X_6-(A)_m$

15 wherein

n and m are each, independently, 0 or 1;

A and Y each comprises from 1 to about 3 amino acid residues;

$X_1$  is L, A, I or nor-leucine (Nle);

20  $X_2$  is D, E, N, Q, homoserine (Hser) or 2-ketopropylalanine (2-ketopropyl-A);

$X_3$  is W, F Y, 4-biphenyl-alanine (Bpa), homophenylalanine (Hphe), 2-

25 Naphthylalanine (2-Nal), 1-Naphthylalanine (1-Nal), or cyclohexyl-alanine (Cha);

$X_4$  is S, A, E, L, T, nor-leucine (Nle), or homoserine (Hser);

$X_5$  is W, H, homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-

25 Naphthylalanine (1-Nal), O-benzyl serine (SeroBn), or 3-Pyridylalanine (3-Pal); and

$X_6$  is L, A, I, or nor-leucine (Nle).

30 4. The anti-inflammatory compound of claim 1, wherein n is 1 and Y is the sequence TA.

30 5. The anti-inflammatory compound of claim 1, wherein m is 1 and A is the sequence QTE.

35 6. The anti-inflammatory compound of claim 1, wherein  $X_b$  is a sequence selected from the group consisting of TALDWSWLQTE; LDWSWLQTE; TALDWSWL; ALDWSWLQTE; LDWSWLQTE; LDWSWL; TALDWSWLQT; TALDWSWLQ; ALDWSWLQT; LDWSWLQ; LDWSWLQT; ADWSWL; LDWSWA; ADWSWA; LDFSWL; LDYSWL; LDWAWL; LDWEWL;

TAADWSWLQTE; ADWSWLQTE; TAADWSWL; AADWSWLQTE;  
 ADWSWLQTE; ADWSWL; TAADWSWLQT; TAADWSWLQ; AADWSWLQT;  
 ADWSWLQ; ADWSWLQT; ALDWSWAQTE; LDWSWAQTE; TALDWSWA;  
 ALDWSWAQTE; LDWSWAQTE; LDWSWA; TALDWSWAQT; TALDWSWAQ;  
 5 ALDWSWAQT; LDWSWAQ; LDWSWAQQT; TAADWSWAQTE; ADWSWAQTE;  
 TAADWSWA; AADWSWAQTE; ADWSWAQTE; ADWSWA; TAADWSWAQT;  
 TAADWSWAQ; AADWSWAQT; ADWSWAQ; ADWSWAQT; TALDFSWLQTE;  
 LDFSWLQTE; TALDFSWL; ALDFSWLQTE; LDFSWLQTE; LDFSWL;  
 TALDFSWLQT; TALDFSWLQ; ALDFSWLQT; LDFSWLQ; LDFSWLQT;  
 10 TALDYSWLQTE; LDYSWLQTE; TALDYSWL; ALDYSWLQTE; LDYSWLQTE;  
 LDYSWL; TALDYSWLQT; TALDYSWLQ; ALDYSWLQT; LDYSWLQ;  
 LDYSWLQT; TALDWAWLQTE; LDWAWLQTE; TALDWAWL; ALDWAWLQTE;  
 LDWAWLQTE; LDWAWL; TALDWAWLQT; TALDWAWLQ; ALDWAWLQT;  
 LDWAWLQ; LDWAWLQT; TALDWEWLQTE; LDWEWLQTE; TALDWEWL;  
 15 ALDWEWLQTE; LDWEWLQTE; LDWEWL; TALDWEWLQT; TALDWEWLQ;  
 ALDWEWLQT; LDWEWLQ; and LDWEWLQT.

7. The anti-inflammatory compound of claim 1, wherein  $X_a$  consists of 6-12 amino acid residues.

20 8. The anti-inflammatory compound of claim 1, wherein  $X_a$  consists of 6-10 amino acid residues.

25 9. The anti-inflammatory compound of claim 1, wherein  $X_a$  comprises at least five basic amino acid residues.

10. The anti-inflammatory compound of claim 1, wherein  $X_a$  comprises at least five amino acid residues independently selected from L-arginine, D-arginine, L-lysine and D-lysine.

30 11. The anti-inflammatory compound of claim 1, wherein  $X_a$  is selected from the group consisting of RRMKWKK; YGRKKRRQRRR; ygrkkrrqrrr; YARKARRQARR; yarkarrqarr; YARAARRAARR; yaraarraarr; rrmkwkk, RRRRRR, RRRRRRR, RRRRRRRR, RRRRRRRRR, RRRRRRRRRRR, RRRRRRRRRRR, .  
 35 rrrrrr, rrrrrrr, rrrrrrrr, rrrrrrrrr, and rrrrrrrrrr.

12. An anti-inflammatory compound comprising an amino acid sequence selected from the group consisting of: RRMKWKKTALDWSWLQTE;

rrmkwkkTALDWSWLQTE; YGRKKRRQRRRTALDWSWLQTE;  
ygrkkrrqrrTALDWSWLQTE; rrrrrrrTALDWSWLQTE;  
RRRRRRRTALDWSWLQTE; YARKARRQARRTALDWSWLQTE;  
yarkarrqarrTALDWSWLQTE YARAARRAARRTALDWSWLQTE;  
5 yaraarraarrTALDWSWLQTE YGRKKRRQRRRLDWSWL; ygrkkrrqrrrLDWSWL;  
RRMKWKKLDWSWL; rrmkwkkLDWSWL; rrrrrrrLDWSWL;  
YARAARRAARRLDWSWL; yaraarraarrLDWSWL; and RRRRRRLDWSWL.

13. An anti-inflammatory compound having a structure selected from the  
10 group consisting of:  
H-RRMKWKKTALDWSWLQTE-NH<sub>2</sub>;  
H-YGRKKRRQRRRTALDWSWLQTE-NH<sub>2</sub>;  
H-rrrrrrrTALDWSWLQTE-NH<sub>2</sub>;  
H-YARKARRQARRTALDWSWLQTE-NH<sub>2</sub>;  
15 H-YARAARRAARRTALDWSWLQTE-NH<sub>2</sub>;  
H-RRMKWKKLDWSWL-NH<sub>2</sub>;  
H-rrmkwkkLDWSWL-NH<sub>2</sub>;  
H-rrrrrrrLDWSWL-NH<sub>2</sub>;  
H-YARAARRAARRLDWSWL-NH<sub>2</sub>;  
20 H-yaraarraarrLDWSWL-NH<sub>2</sub>; and  
H-YGRKKRRQRRRLDWSWL- NH<sub>2</sub>.